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LIST OF ABBREVIATIONS

ANN	-	Artificial Neural Network
COMAC	-	Coordinate Modal Assurance Criterion (COMAC)
FEM	-	Finite Element Model
FRF	-	Frequencies Respond Functions
Logsig	-	Log-Sigmoid
MAC	-	Modal Assurance Criterion
MLP	-	Multi-Layer Perceptron
MSE	-	Min Square Error
Purelin	-	Linear
SHM	-	Structural Health Management
SOM	-	Self Organising Maps
SRF	-	Stiffness Reduction Factor
Tansig	-	Tangent-Sigmoid

LIST OF SYMBOLS

[A]	-	Damaged mode shape
[*A*’]	-	Normalised mode shape
A_k	-	Hessian matrix
[B]	-	Original undamaged mode shape
β_k	-	Update value for Scaled Conjugate Gradient algorithm
[C]	-	Vector of damping
deltaX	-	Weight change for Resilient Backpropagation algorithm
dXprev	-	Previous change to the weight or bias
$\frac{dperf}{dx}$	-	Gradient in transfer function
e	-	Network error vector
E	-	Young Modulus
{f(t)}	-	Vector of input forces
gX	-	Gradient in Resilient Backpropagation algorithm
J	-	Jacobian matrix that contains the first derivatives
[K]	-	Stiffness matrices
λ_{jk}	-	j^{th} Mode frequency at k^{th} cases
lr	-	Learning rate
[M]	-	Vector of mass
mc	-	Momentum and learning rate adjustment
$\{\boldsymbol{\phi}_i\}$	-	i^{th} Mode shape
ϕ_{jk}	-	j^{th} normalised mode displacement at k^{th} cases
P	-	Mass Density
(P_0)	-	Steepest descent direction
p_R	-	$_R{}^{th}$ Input for neuron’s transfer function

SRF_{nk}	-	SRF for segment at k^{th} cases
v	-	Poisson Ratio
$\boldsymbol{\omega}_{\mathbf{i}}$	-	i^{th} Modal circular frequency
$w_{1,R}$	-	$_{R}{}^{th}$ Weight in transfer function
$\{\ddot{X}\}$	-	Vector of acceleration
$\{\dot{X}\}$	-	Vector of velocity
$\{X(t)\}$	-	Vector of displacement

LIST OF APPENDICES